

REMARKS

The drawings have been amended to address the concerns raised by the Examiner. In figure 3, arrows have been included to show that 25 refers to the camphorate edge, not to the item as a whole. Figure 9 has been similarly amended. Further, what was previously the second end 37 has been amended to the second end 40. This more clearly draws the distinction between the item 37 and second end of the item, 40. The specification on page 8 has also been amended to reflect this clarification.

Claim Rejections under 35 U.S.C. §112

Claims 13 and 20 have been modified to remove the "by means of" language.

With reference to the Examiner's view that the abutment ring clamps the abutment ring, applicants believe that the Examiner is reading the claim incorrectly. The original claim makes sense if it refers to the recess being adapted to clamp, and not the abutment ring being adapted to clamp itself. In any event, the claim has been amended to make this point more clear.

Applicant has further amended claims 13 and 20 so that they are not limited to "two clamping halves". The claims now refer to "clamping elements". The basis for this amendment can be found in the specification as it states that the ring may be in two halves, but does not limit the invention thereto, hence the ring may be in any number of elements, not just two implied by the word "half".

Claim Rejections under 35 U.S.C. §102

Applicant disagrees that either '901, Halling or '980, Hill anticipate the claimed subject matter. Common to both Halling and Hill is that the seal is placed between the flanges. This positioning is shown in Figure 1 in Halling (see 80), and Figures 1 and 3 in Hill (see 27). Claims 13 and 20 recite that the seal must be located in the overlapping region

of end cylindrical portions as shown in Figs. 1, 3, 5, 7, 9 - especially item 5. This position is distinctively different than that shown in Hill.

Placing the seal between the flanges as shown in Hill and Halling and not between the sliding parts of the coupling has certain disadvantages. As a part of the height of the flanges is taken up by the seals, the radial extension of the flanges for a given strength is increased. This makes the connection less stream-lined, which is a disadvantage when high voltages are applied, as in a sputtering magnetron, as the field is distorted more and the likelihood of high fields and discharge are increased. Also, as stated in the specification, the coupling according to the present application is meant for repeated closing and opening. If this is done with the couplings of Halling or Hill, the seal falls out and has to be replaced and/or cleaned, whereas in the case of the present invention the ring seals can stay in position and are not free to fall out. Also, the seals of Halling and Hill are dependent upon the distance between the flanges that defines the size of the space for the seal. The distance depends on how close the flanges are brought together. If this is some distortion, the flanges may be locally further apart from each other. On the other hand the coupling of the present invention has a seal 5, which is not sensitive to the relative movements of the coupling parts.

Also when the parts of the Halling or Hill are disassembled sealing surfaces are exposed to damage. With the claimed subject matter the seal is formed between the cylindrical parts of the end portions in the overlap region - the inner surface of the outer tubular part is more protected when disassembled and the "O" ring in its seat protects the lower seat surface from damage.

In light of the above amendments and arguments, the applicants believe that all of the Examiner's objections and rejections have been addressed, and respectfully request that this case pass to issue.

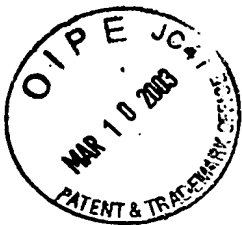
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Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Peter J. Shakula', written over a horizontal line.

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MARKED UP VERSION SHOWING CHANGES MADE

A further clamping device 3 in accordance with an embodiment of the present invention is shown schematically in Figs. 8 and 9 and can be provided with additional rings 31 and/or 32 which may be used to prevent arcing in a sputtering magnetron. One of the tube ends (2) is part of a rotating cylindrical target and can be advantageously used in a reactive sputtering process. Use of the clamping device 3 in accordance with this embodiment prevents arcing when used in a vacuum deposition process. The numbering of the various parts in Figs. 8 and 9 corresponds with those of the previous embodiments, except in previous embodiments the material to be sputtered 8 was applied onto a backing tube 7. In this embodiment the material to be deposited may be in the form of a massive tube 2 provided with an integral ring 37 fixed to the end thereof and having the appropriate clamping flange 11. Thus, in accordance with this embodiment the second end portion is [37] 40. However, the present embodiment is not limited thereto but may include the flange fixing methods described with reference to Figs. 1 and 3.

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13. (Amended)

A vacuum tight coupling for end portions of two tubular sections, a portion of the two two tubular sections having an inner space, the size of the inner space of a first end portion being smaller than that of a second end portion, the second end portion having a flange extremity axially slidable over the first end portion to abut the flange extremity against a

peripheral outer abutment ring on said first end portion, the coupling comprising at least one sealing ring located between said end portions in their overlapping contact area and further comprising a clamping ring with a substantially cylindrical outer surface and being composed of clamping elements, [two substantially equal halves] each clamp [half] element having a semi-circular or U-shaped cross section with an inwardly oriented recess, said recess enclosing said flange extremity and said abutment ring, [and being adapted] said recess cooperating with the flange extremities to positively, solidly and axially clamp the abutment ring against the flange extremity, the clamp elements [two ring halves] being fixed to each other at their extremities with [by means of] fixing means comprising in at least one place on the clamping ring bolting means, the axis of which is perpendicular to the longitudinal axis of the coupled tubular sections and substantially tangential to the clamping ring periphery.

15. (Amended) A coupling according to claim 37 [13], wherein clamping elements the [ring halves], besides said bolting means for fixing their extremities in one place comprise pivoting means for fixing them in their opposite extremities.

16. (Amended) A coupling according to claim 13, wherein [herein] the first end portion comprises a tubular insert coupled between a tubular section and said second end portion, and wherein the insert end facing the tubular section is a ring which can slide axially over said tubular section whereas the

opposite insert end is a ring over which said second end portion can slide.

17. (Amended) A coupling according to claim 13, wherein the length of the overlap portion between the first and second tube portions is 50% or less [, preferably 30% or less, more preferably 20% or less] of the inner diameter of the first portion.

20. (Amended) A coupling for a cylindrical sputtering target for end portions of two tubular sections, a portion of the two tubular sections having an inner space, the size of the inner space of a first end portion being smaller than that of a second end portion, the second end portion having a flange extremity axially slidable over the first end portion to abut the flange extremity against a peripheral outer abutment ring on said first end portion, the coupling comprising at least one sealing ring between said end portions in their overlapping contact area and further comprising a clamping ring with a substantially cylindrical outer surface and being composed of clamp elements [two substantially equal halves], each clamp element [half] having a semi-circular or U-shaped cross section with an inwardly oriented recess, said recess enclosing said flange extremity and said abutment ring, said recess cooperating with the flange extremities [and being adapted] to positively, solidly and axially clamp the abutment ring against the flange extremity, the [two ring halves] clamp elements being fixed to each other at

their extremities with [by means of] fixing means comprising in at least one place on the clamping ring bolting means, the axis of which is perpendicular to the longitudinal axis of the coupled tubular sections and substantially tangential to the clamping ring periphery.

22. (Amended) A coupling for a cylindrical sputtering target according to claim 38 [20], wherein the ring halves, besides said bolting means for fixing their extremities in one place comprise pivoting means for fixing them in their opposite extremities .

24. (Amended) A coupling for a cylindrical sputtering target according to claim 20, wherein the length of the overlap portion between the first and second tube portions is 50% or less [, preferably 30% or less, more preferably 20% or less] of the inner diameter of the first portion.